Remarks:

Applicant is requesting correction of an inconsistency in the specification. It is clear from the specification that the invention describes use of what is known in the art as a "low modulus" fiber. Moreover, the example sets forth a low modulus fiber having a modulus of elasticity of 11.2 Msi which comports with the definition of a low modulus fiber in the art. On the other hand, the range that the amendment is requesting to delete inaccurately describes the commonly accepted modulus of elasticity value range. In particular, the range disclosed does not encompass the example and further, does not encompass the definition of low modulus as known in the art. As such, Applicant is requesting that the erroneous range be deleted.

Deletion of the range does not add new matter. "A change to correct an error is not considered new matter if one skilled in the art would appreciate not only the existence of the error but what the error is." Koito Mfg. Co., Ltd. V. TurnKey Tech. LLC, 381 F.3d 1142 (Fed. Cir. 2004) *citing* In re Oda 443 F.2d 1200 (1971). In Koito, the patentee amended the specification by altering the definition of the thickness of a flow channel in the description of the first and second embodiments of the invention. The effect of the correction was to redefine the flow channel. However, the thicker flow channel was supported in the specification by Figures 5 and 6. "Because the amended material is inherently contained in the original application, it cannot constitute new matter." Koito *citing* Schering Corp. v. Amgen Inc., 222 F.3d 1347, 1352 (Fed. Cir. 2000).

In the present case, the definition of a low modulus fiber is well known in the art. Applicant's use of "low modulus" throughout the specification comports with usage of the term "low modulus" in the art. Applicant further provides an example of a low modulus fiber that comports with the definition of low modulus fiber in the art. *See* Example 1, page 55 in the specification. One skilled in the art would immediately recognize the inconsistency between the erroneous range, Applicant's example, and the customary use of low modulus in the art. Accordingly, Applicant respectfully submits that the ranges for low modulus fiber set forth in the specification should be deleted because the mistake is obvious to one skilled in the art, the range is known in the art and the deletion does not add new matter to the specification. Documents supporting the deletion of this range are cited herein and attached.

A composite core of the present invention comprises an inner advanced composite layer and an outer low modulus layer. For example, the composite core according to the invention

may comprise an inner carbon/epoxy layer and an outer glass fiber/epoxy layer. Glass fiber is well characterized and known in the art as a low modulus fiber having tightly controlled physical and mechanical specifications. E-glass, for example, has a modulus of elasticity of 10.5 Msi and S glass has a modulus of elasticity of 12.6 Msi. Engineering Mechanics of Composite Materials, I. Daniel and O. Ishai, 1994 Oxford University Press, page 19-29.

Published research papers support characterizing glass fiber as a low modulus fiber. For example, in a paper titled, "Behavior of FRP Composite-Strengthened Beams Under Static and Cyclic Loading", twenty-four beams were reinforced with eight composite strengthening configurations using high and low modulus epoxy, high and low modulus fiber, and 1 and 2 composite layers. Glass fiber from the Fyfe Corporation – Tyfo SHE-51 was used as the low modulus fiber having a modulus of elasticity of 10.5 Msi. June, 2001. (*see*, www.odot.state.or.us/tddresearch/ reports/pdf/**frp_beams**.pdf and http://www.fyfeco.com/products/compositesystems/seh-51.html).

The term low modulus is used consistently throughout the specification in accordance with the known definition. Moreover, the term "low modulus" is used to describe creating a composite core having the desired characteristics of the end composite core, wherein the values of the completed composite core are described. In particular, "to achieve the desired ampacity gains, a composite core according to the invention may also combine fibers having a low modulus of elasticity with fibers having a high modulus of elasticity for increased stiffness of the core and a lower elongation percent. By combining fibers, new property sets are obtained, including different modulus of elasticity, thermal expansion, density, and cost. Sag versus temperature calculations show improved ampacity over ACSR cables when a high-strength and high-stiffness composite is combined with a lower strength and lower stiffness composite." [0011].

"Sag versus temperature calculations require input of the modulus of elasticity, coefficient of thermal expansion, the weight of the composite strength member, and the conductor weight." [0065] "As another example of the composite core, it may be feasible to

make a composite core comprising interspersed high modulus of elasticity fibers and low modulus of elasticity fibers." [0066] "The carbon layer is characterized by high strength and stiffness and is a weak electrical conductor whereas the outer low modulus glass layer is more flexible and non-conductive." [0082] "In one embodiment, the combination of fibers creates a high strength inner core with minimal conductivity surrounded by a low modulus nonconductive outer insulating layer." [0128]

An example of an ACCC reinforced cable in accordance with the present invention is set forth on page 55, paragraph [0142] of the specification. In particular, the example illustrates "an ACCC reinforced cable comprising four layers of components consisting of an inner carbon/epoxy layer, a next glassfiber/epoxy layer and two layers of tetrahedral shaped aluminum strands." In the example, the outer layer comprises R099-688 glassfiber/epoxy having a modulus of elasticity of 11.2 Msi. It is noted that the example falls within the known definition of low modulus in the art, but outside of the erroneous range serving as the subject matter of the requested amendment.

Moreover, the specification further describes the ability to substitute another fiber having the mechanical property range of low modulus glass fiber for at least a portion of the fibers of the composite core. For example, the specification describes basalt as having a modulus of elasticity in the range of about 12.95 Msi, wherein "[t]he basalt fibers can provide increased tensile strength, a modulus of elasticity between carbon and glass fiber, and an elongation percent close to that of carbon fibers. A further advantage is that basalt has superior dielectric properties to carbon." [0067] The specification further provides details explaining how to select fibers and resins to achieve the desired characteristics of the final composite core. As such, one skilled in

the art would recognize that a low modulus fiber does not have a modulus of elasticity in the range of 6 to 7 Msi.

The mistake is a misunderstanding on the part of the Inventors. The Inventors misinterpreted the mistaken range for modulus of elasticity to apply to the overall outer core as opposed to the low modulus fibers within the outer core. The Inventors always intended that the fibers within the outer core were simply intended to comprise low modulus fibers as the term is known in the art.

In summary, the range set forth for a low modulus fiber comprising a modulus of elasticity of about 6 to about 7 Msi was an inadvertent error and although immediately recognizable as an error in light of the low modulus term of art, the range introduces an inconsistency into the specification. The example in the specification comports with the definition as known and used in the art. Accordingly, deletion of the range as set forth merely serves to eliminate an obvious inconsistency in the specification and does not expand the scope of the document. As such, Applicant respectfully submits that any reference to the erroneous ranges, as set forth above, be deleted from the specification.

Sincerely,

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Engineering Mechanics of Composite Materials;
www.odot.state.or.us/tddresearch/reports/pdf/frp_beams.pdf
www.fyfeco.com/products/compositesystems/seh-51.html;
Tyfo SHE-51 Specification Sheet